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| JACOBSON HOLMAN PLLC 400 SEVENTH STREET N.W. SUITE 600 WASHINGTON, DC 20004 | | | PATTERSON, MARC A | |
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| | | | 1772 | |

DATE MAILED: 03/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/710,892

Applicant(s)

ITO ET AL.

Examiner

Marc A Patterson

Art Unit

1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1772

DETAILED ACTION

WITHDRAWN REJECTIONS

1. The 35 U.S.C. 112 second paragraph rejection of Claims 1 – 21, of record on page 3 of the previous Action, is withdrawn.

The 35 U.S.C. 102(b) rejection of Claims 1 – 4, 14 and 18 – 19 as being anticipated by Yamamoto et al (U.S. Patent No. 5,891,538), of record on page 4 of the previous Action, is withdrawn.

NEW REJECTIONS

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 – 4, 14 and 18 – 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamamoto et al (U.S. Patent No. 5,891,538).

With regard to Claim 1, Yamamoto et al disclose a fuel hose (column 3, lines 10 – 17) comprising an inner layer of a fluororesin and an outer layer of thermoplastic resin (polyamide; column 9, lines 10 – 16 and 58 – 63); Yamamoto et al teach that the melt viscosity of the inner layer is between 10 and 100,000 poise at 250 degrees Celsius (column 4, lines 57 – 64) and the melt viscosity of the outer layer is between 10 and 100,000 poise at 250 degrees Celsius (column 3, lines 47 – 55). Yamamoto et al therefore disclose a ratio of melt viscosity of the inner to the outer layer ranging between $1 : 1 \times 10^{-4}$ and $1 : 1 \times 10^4$, which includes 1 : 40. Because

Art Unit: 1772

poise and $\text{Pa} \cdot \text{s}$ are equivalent units of melt viscosity ($1 \text{ poise} = 10 \text{ Pa} \cdot \text{s}$), Yamamoto et al disclose the same range for melt viscosity as expressed in $\text{Pa} \cdot \text{s}$. With regard to the claimed aspect in Claim 1 of the layers being formed by co – extruding the materials for the layers, the scope of the claims falls within the limitations of Yamamoto et al as discussed above. The method of making the layers (product – by – process) is given little patentable weight.

With regard to Claims 2 – 3, the fluoro resin is an ethylene – tetrafluoroethylene copolymer copolymerized in a molar ratio of 60 : 40 (column 4, lines 46 – 48).

With regard to Claim 4, the copolymer comprises one other monomer comprising propylene (hexafluoropropylene; column 6, lines 49 – 52).

With regard to Claims 5 – 6, the inner layer is a copolymer of vinylidene fluoride, hexafluoropropylene and tetrafluoroethylene having a molar ratio ranging from 45 to 90 : 5 to 50 : 0 to 35 (column 6, lines 49 – 52). It therefore would have been obvious for one of ordinary skill in the art to select a molar ratio of 50 : 45 : 5, as the molar ratio taught by Yamamoto et al includes this ratio.

With regard to Claim 14, the thermoplastic resin taught by Yamamoto et al is a polyamide (column 3, line 39; column 9, lines 10 – 16).

With regard to Claim 18, Yamamoto et al teaches an multilayer hose comprising an olefin elastomer (elastomeric copolymer comprising olefin; column 5, lines 15 – 19) as a component of the thermoplastic layer (blended with the polyamide; column 4, lines 57 – 59), therefore an outer layer comprising an olefin thermoplastic elastomer.

With regard to Claim 19, the outer layer taught by Yamamoto et al is surrounded by a protective rubber layer (the polyamide layer is an elastomer; column 3, lines 39 – 40).

Art Unit: 1772

4. Claims 7 – 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al (U.S. Patent No. 5,891,538) in view of Yokoe et al. (U.S. Patent No. 5,919,326).

Yamamoto et al. disclose a fuel hose comprising a fluororesin inner layer and an outer layer as discussed above. With regard to Claims 7 – 8, Yamamoto et al fail to disclose an inner layer comprising an electrically conductive material.

Yokoe et al teach a fuel hose (column 1, lines 19 – 21) comprising a fluororesin inner layer comprising carbon black, which is an electrically conductive material, and an outer layer, for the purpose of dissipating static charge (column 5, lines 19 – 35). Therefore, one of ordinary skill in the art would have recognized the advantage of providing for carbon black in Yamamoto et al, which is a fuel hose, depending on the desired conductivity of the end product as shown by Yokoe et al.

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for carbon black of Yokoe et al in Yamamoto et al in order to dissipating static charge as taught by Yokoe et al.

With regard to Claim 9, the fluororesin taught by Yokoe et al has a resistance (volume resistivity) not exceeding $10^{10} \Omega\text{cm}$ (column 5, line 32).

5. Claims 10 – 13, 15, 17 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al (U.S. Patent No. 5,891,538) in view of Spohn (WO 98/05493).

Yamamoto et al disclose a hose comprising a fluororesin as discussed above. With regard to Claim 21, the fluororesin is a copolymerizate of a fluororesin with a monomer comprising a monocarboxylic acid (anhydride, therefore an unsaturated monocarboxylic acid group; column 7,

Art Unit: 1772

lines 65 – 67; column 8, lines 1 – 4 of Yamamoto). With regard to Claim 10, Yamamoto et al. fail to disclose a fluororesin which contains a reactive functional group consisting of $\text{CF}_2=\text{CFOCF}_2\text{CF}(\text{CF}_3)\text{OCF}_2\text{CF}_2\text{COOH}$

Spohn teaches the use of a fluororesin layer containing a reactive functional group (it is adhesively activated by having a compound grafted thereto which imparts polar functionality (page 7, lines 8 – 10 and 30 – 35), for the purpose of producing a fuel hose which has an excellent chemical resistance (page 1, lines 12 – 14 of Spohn). Therefore, one of ordinary skill in the art would have recognized the advantage of providing for the fluororesin of Spohn in the hose of Yamamoto et al, which is a fuel hose, depending on the desired chemical resistance of the hose as shown by Spohn, and thus would have been motivated to use the teachings of Spohn in the fuel hose disclosed by Yamamoto et al.

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for a fluororesin layer containing a reactive functional group in Yamamoto et al. in order to produce a fuel hose which has an excellent chemical resistance as taught by Spohn.

With regard to Claims 11 – 13, the reactive group is $\text{CF}_2=\text{CFOCF}_2\text{CF}(\text{CF}_3)\text{OCF}_2\text{CF}_2\text{COOH}$, and is therefore a carboxyl group (page 7, lines 8 – 35 of Spohn); the reactive functional group is therefore formed by copolymerizing the fluororesin with an unsaturated monocarboxylic acid containing fluorine.

With regard to Claim 15 and 17, Yamamoto et al fail to disclose a polyamide layer which comprises the modification of the carboxyl groups of the polyamide with amino groups resulting in amino groups in the amount of 1×10^{-5} gram – equivalent per gram.

Art Unit: 1772

Spohn teaches the modification of the carboxyl groups of a polyamide layer of a fuel hose with amino groups (excess diamine is added to provide an excess of amine end groups over carboxyl end groups; page 3, lines 27 – 34 of Spohn) for the purpose of producing a fuel hose which has an excellent chemical resistance (page 1, lines 8 – 24 of Spohn). One of ordinary skill in the art would therefore have recognized the advantage of providing for the modification of the carboxyl groups with amino groups in Yamamoto et al., which is a fuel hose, depending on the desired chemical resistance of the hose.

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for the modification of the carboxyl groups with amino groups in Yamamoto et al in order to produce a fuel hose which has an excellent chemical resistance as taught by Spohn.

Spohn also fails to disclose the addition of excess diamine in an amount resulting in amino groups in the amount of 1×10^{-5} gram – equivalent per gram.

However, Spohn teaches that excess diamine is added to provide an excess of amine end groups over carboxyl end groups (page 3, lines 27 – 34) for the purpose of obtaining a fuel hose which has an excellent chemical resistance (page 1, lines 8 – 24 of Spohn). Therefore, one of ordinary skill in the art would also have recognized that the number of amino groups in the polyamide would be readily determined through routine optimization depending on the desired amount of excess of amine end groups over carboxyl end groups in order to obtain a desired chemical resistance of the end product as shown by Spohn.

Therefore, it would be entirely obvious for one of ordinary skill in the art to vary the number of amino groups in the polyamide, and their excess amount over carboxyl end groups,

Art Unit: 1772

by varying the amount of excess diamine which is added, since the amount of excess diamine would be readily determined through routine optimization by one having ordinary skill in the art depending on the desired chemical resistance of the end product. *In re Boesch and Slaney*, 205 USPQ 215 (CCPA 1980).

6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al (U.S. Patent No. 5,891,538) in view of Murakami et al (Japanese Patent No. 08104805).

Yamamoto et al disclose a fuel hose comprising an inner layer of a fluororesin and outer layer of polyamide as discussed above. Yamamoto et al fail to disclose a polyamide containing a diazabicycloundecene salt.

Murakami et al teach the addition of a diazabicycloundecene salt to the polyamide layer of a multilayer hose, for the purpose of increasing the interlaminar adhesion strength (Abstract). Therefore, one of ordinary skill in the art would therefore have recognized the utility of the diazabicycloundecene salt taught by Murakami et al in the polyamide layer of Yamamoto et al, which is a multilayer hose, in order to increase the interlaminar adhesion strength of the hose to a desired increased level of strength as taught by Murakami et al.

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for a diazabicycloundecene salt in Yamamoto et al in order to increase the interlaminar adhesion strength as taught by Murakami et al.

7. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al (U.S. Patent No. 5,891,538) in view of Stanley (U.S. Patent No. 5,005,613).

Art Unit: 1772

Yamamoto et al disclose a fuel hose comprising an inner layer of a fluororesin and outer layer of polyamide as discussed above. Yamamoto et al fail to disclose a fuel hose which is corrugated.

Stanley teaches the corrugation of a fuel hose for the purpose of improving the flexibility as compared to a smooth hose (column 1, lines 62 – 68; column 2, lines 1 – 9). Therefore, the advantage of providing for corrugation of Yamamoto et al, which is a fuel hose, would have been obvious to one of ordinary skill in the art, depending on the desired flexibility of the hose as taught by Stanley.

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for corrugation in Yamamoto et al in order to improve the flexibility as taught by Stanley.

ANSWERS TO APPLICANT'S ARGUMENTS

8. Applicant's arguments regarding the 35 U.S.C. 112 second paragraph rejection of Claims 1 – 21 and 35 U.S.C. 102(b) rejection of Claims 1 – 4, 14 and 18 – 19 as being anticipated by Yamamoto et al (U.S. Patent No. 5,891,538), of record in the previous Action, have been considered and have been found to be persuasive. The rejection is therefore withdrawn. The new 35 U.S.C. 103(a) rejection of Claims 1 – 4, 14 and 18 – 19 as being unpatentable over Yamamoto et al (U.S. Patent No. 5,891,538), 35 U.S.C. 103(a) rejection of Claims 5 – 6 as being unpatentable over Yamamoto et al (U.S. Patent No. 5,891,538), 35 U.S.C. 103(a) rejection of Claims 7 – 9 as being unpatentable over Yamamoto et al (U.S. Patent No. 5,891,538) in view of Yokoe et al. (U.S. Patent No. 5,919,326), 35 U.S.C. 103(a) rejection of

Art Unit: 1772

Claims 10 – 13, 15, 17 and 21 as being unpatentable over Yamamoto et al (U.S. Patent No. 5,891,538) in view of Spohn (WO 98/05493), 35 U.S.C. 103(a) rejection of Claim 16 as being unpatentable over Yamamoto et al (U.S. Patent No. 5,891,538) in view of Murakami et al (Japanese Patent No. 08104805) and 35 U.S.C. 103(a) rejection of Claim 20 as being unpatentable over Yamamoto et al (U.S. Patent No. 5,891,538) in view of Stanley (U.S. Patent No. 5,005,613) above are directed to Claims 1 – 21.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc Patterson, whose telephone number is (571) 272 – 1497.

Art Unit: 1772

The examiner can normally be reached on Monday through Friday from 8:30 AM to 5:00 PM. If attempts to reach the examiner by phone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached at (571) 272 - 1498. FAX communications should be sent to (703) 872-9310. FAXs received after 4 P.M. will not be processed until the following business day.

Marc A. Patterson, PhD.

Marc Patterson

Art Unit 1772

Harold Pyon
HAROLD PYON
SUPERVISORY PATENT EXAMINER
1772

3/22/04